



WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2004ID46B

Title: Ground water/surface water interactions in the Idaho batholith

Project Type: Research

Focus Categories: Hydrology

Keywords: Recharge

Start Date: 04/01/2004

End Date: 12/15/2005

Federal Funds Requested: \$14,925

Non-Federal Matching Funds Requested: \$35,207

Congressional District: 1

Principal Investigator:

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Abstract

Mountainous regions play a critical role in the hydrology of semi-arid drainage basins. They receive much more water than lower regions, they provide most of the runoff, and they provide most of the groundwater recharge to adjacent valley aquifers. Sound groundwater management plans in mountain front communities must rely on thorough understanding of the interactions between surface water and groundwater in the mountain blocks. However, groundwater recharge in mountain blocks is difficult to measure and poorly understood because shallow soils over fractured bedrock create complex flow paths. We propose a field study in the Dry Creek watershed near Boise, Idaho to determine the proportion of high elevation precipitation that enters the subsurface fracture system, and the mean residence time (MRT) of streamflow at various scales to estimate the fate of recharged water. Recharge will be determined at various watershed scales using water balance and chloride balance methods. Mean residence time (MRT) of streamflow will be determined using the stable isotope convolution integral method to all estimation of very your MRT's (days to years). Tritium analysis will also be performed on springs in the mountains to determine longer residence times. The results will provide an important first step to fully understanding hydrologic connections between the mountain block and valley aquifer systems in the Treasure Valley.